DS ASSIGNMENT NO: 04

Simple Task Scheduler

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Date:-

PROBLEM STATEMENT

Simple Task Scheduler:

Write a program that implements a simple task scheduler using a singly linked list. Each node in the linked list represents a task with its priority and execution time. Tasks are scheduled based on their priority, with higher priority tasks being executed first.

CODE

```
#include <iostream>
using namespace std;

class Node {
public:
    string task_name;
    int priority;
    int exe_time;
    Node* next;


    // Constructor
    Node(string task, int p, int t) {
        task_name = task;
        priority = p;
        exe_time = t;
        next = nullptr;

    }
    void display() {
      cout<<"Task name"<<" "<< task_name <<" with priority "<<priority<<" "<<"is scheduled for
execution"<<endl;
        cout << "Task Name: " << task_name;
        cout<<endl;
        cout << "Priority: " << priority;
        cout<<endl;
```

```
        cout << "Execution Time: " << exe_time;
        cout<<endl;
        cout << "-----------------------------\n";
    }
};
int main()
{
int n;
string task_name;
int priority;int exe_time;
Node*header=NULL,*temp=NULL,*t,*cur,*prev;
cout<<"===== Simple task scheduler ====\n"<<endl;
cout<<"Enter how many nodes you want to insert: ";
cin>>n;
cout<<endl;
for(int i=0;i<n;i++)
{

cout<<"Enter task name:";
cin>>task_name;
cout<<"Task priortiy:";
cin>>priority;
cout<<"Enter excution time:";
cin>>exe_time;
cout<<endl;

//creating new node
if(header==NULL)
{
header=new Node(task_name,priority,exe_time);
}
else
{
temp= new Node(task_name,priority,exe_time);

//linking the nodes
//inserting nodes at end

//t=header;
//attach temp node before header :inserting at beginning
if(header->priority < temp->priority)
{
temp->next=header;
header=temp;
```

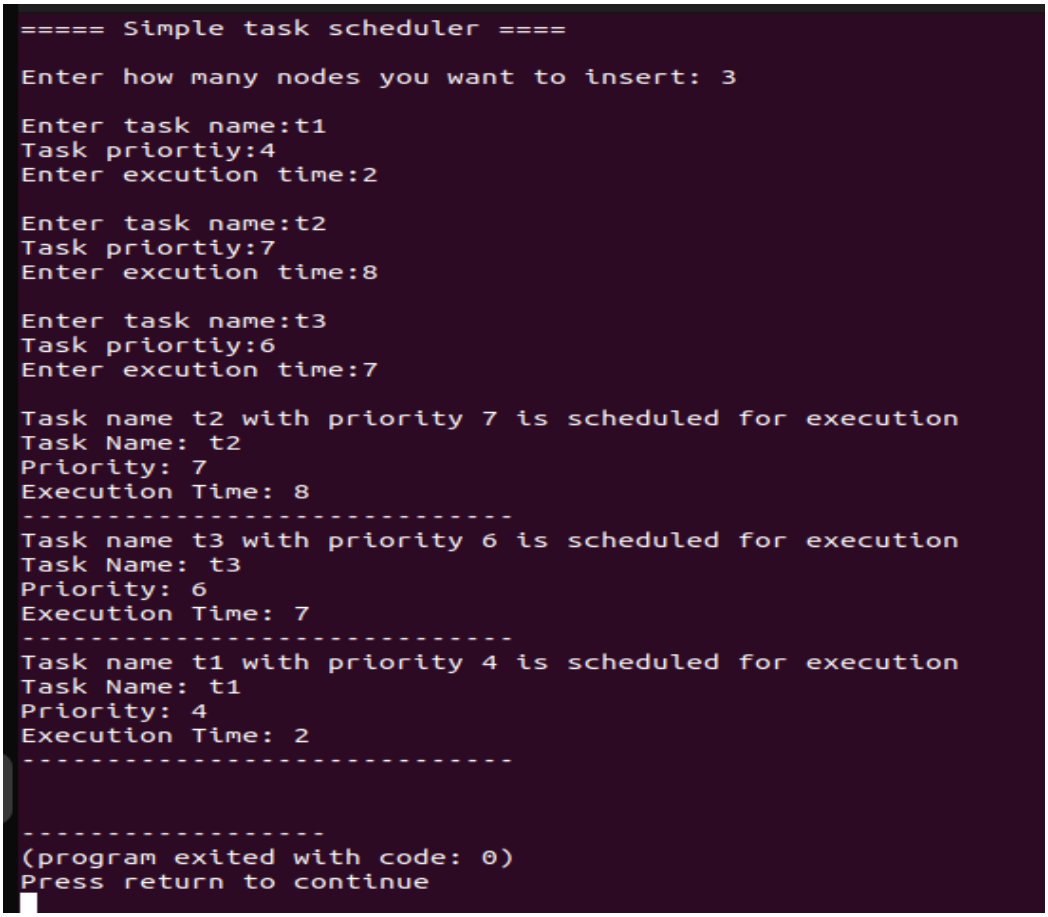
```
}
//insertion at any point in linked list
else{
prev=header;
cur=header->next;
if(cur==NULL)
{
header->next=temp;
}
else{
while(cur->next!=NULL||cur->priority>temp->priority)
{
prev=cur;
cur=cur->next;
if(cur==NULL)
{
break;
}
}
//insertion at end
if(cur==NULL&& prev->priority>temp->priority)
{
prev->next=temp;
}
else{
temp->next=cur;
prev->next=temp;
   }
}
   }
}
} //linked

//for displaying linked list
t=header;

while(t!=NULL)
{
t->display();
t=t->next;
}
return 0;

}
```

OUTPUT


===== Simple task scheduler ====
Enter how many nodes you want to insert: 3
Enter task name:t1
Task priortiy:4
Enter excution time:2
Enter task name:t2
Task priortiy:7
Enter excution time:8
Enter task name:t3
Task priortiy:6
Enter excution time:7
Task name t2 with priority 7 is scheduled for execution
Task Name: t2
Priority: 7
Execution Time: 8
Task name t3 with priority 6 is scheduled for execution
Task Name: t3
Priority: 6
Execution Time: 7
Task name t1 with priority 4 is scheduled for execution
Task Name: t1
Priority: 4
Execution Time: 2
(program exited with code: 0)
Press return to continue